of opacity in the tint. It may happen that shaded passages of the first effect, interfere with the realization of the second; but in order to remedy such inconveniences, and to countervail these strong shades, their power may be neutralized by using the grey of a degree of opacity equal to the strength of the shadows which it is intended to supersede.

It will occur to the artist, that it will be necessary to urge this second effect to its utmost power.

When the general effect of light and shade is finished on these principles, and the desired effect is obtained, the picture may be colored, but only with most transparent tints prepared in oil.

THE LIGHTING-UP OF THE PICTURE.

The first effect painted on the light, or front part of the canvas, is lighted by reflection; that is to say, by a light proceeding from the front, while the second—that painted on the wrong side—is lighted by refraction, that is, from behind.

In the event of any modification being necessary to any portions of the pictures, these may be effected by the employment of both lights simultaneously on the pictures.

The light by which the painting on the front of the canvas is seen, should come from above; but that by which the second effect, that painted behind, is seen, should come from the vertical openings, it being always understood that these are to be completely closed when the first effect is shown.

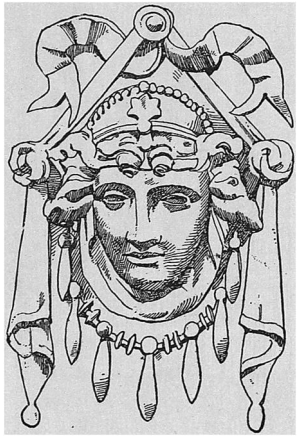
If it happen to be necessary to modify any part of the first picture, by the light properly belonging to the second, that is, coming from behind, then this light must be enclosed so as to fall only on the proper place.

The windows, or apertures, ought to be distant from the paintings at least seven or eight feet, in order to facilitate the modification of the light, and the communication of color, by its transmission through colored media, according to the effects or qualification it may be necessary to give to the subject.

For the first effect, or front picture, the same means is necessary.

All the substances used in painting are colorless. They only possess the power of reflecting this or that ray of light, which in itself contains all colors.

The more pure these substances are, the more decidedly do they reflect the simple colors: never, however, by any absolute



or independent property, which, by the way, it is not necessary they should do, in order to represent the effects of nature.

To explain, then, the principle on which dioramic paintings are executed, are lighted up, take, as an example, the effect produced when light is decomposed; that is to say, when a portion of its component rays is intercepted.

Put upon the canvas two colors, the brightest possible, the one red, the other green, both, as nearly as may be of the same degree of intensity.

Now interpose a red medium, as a colored glass, in the stream of light which falls upon them. What happens? The red color reflects the rays which belong to it, but the green becomes black. Diversify the experiment, by the interposition of a green glass, and the result is reversed; the green color yields its proper reflection, the red, in its turn, becomes black.

These results, however, are not perfect, unless the interposed media excludes all rays but their own, a condition not easily obtained, as colored media rarely have the power of excluding all but one ray.

The general effect, however, has been sufficiently proved.

To consider this principle in its application to dioramic pictures (though in these works there are only two effects represented, one of day, by lighting in front, the other of night, by lighting behind,)—these effects do not pass the one into the other, without a complicated combination of the media which the light has to traverse, so producing an affinity of other illusions, similar to those which nature presents in her transitions from morning to night, and the reverse.

It is not necessary to employ media in intense hues, in order to obtain striking qualifications of color, as often a slight shade in the medium suffices to effect a great change.

From the principle of dioramic art, according to which, the most powerful results are obtained by a single decomposition of light, the importance of observing the aspect of the sky will at once be understood, when we would appreciate the tone of a picture, the coloring matters of which are subject to decompositions so extensive.

The best light for this purpose is that from a pale sky; for when the sky is blue, this coincides with the hue of the picture, and hence the cold tones are most powerfully brought out; while the warm tones remain ineffective.

These media are not present; they are reduced comparatively to neutral tints by the blue medium of the sky, which is so favorable to the cold tones of the picture.

When the sky is colored, the warm tones on the contrary, prevail; the reds and yellows come forth too vigorously, and, overpowering the colder tones, vitiate the harmony of the composition, or it may be give to it a character quite different from that intended, by substituting a general warm tone, for a system of cold colors.

It will thus be understood from these observations, that uniform intensity of color cannot be maintained from morning to evening.

We may even venture to assert it to be physically demonstrated, that the appearance of a picture cannot be the same at all hour of the days.

This is perhaps one of the causes which contribute to render good painting so difficult of appreciation.

By the changes in the aspect of the sky, which take place between morning and evening, painters are misled as to the real appearance of their pictures, and incorrectly attributing these apparent alterations to other causes, are betrayed into false color; whereas, in reality, the change is only in the medium—that is, the light.

TREATMENT OF ARGEMONE DESIGN FOR VASE.

THE Argemone resembles a single poppy while the leaves are armed with slender prickles very like thistles. It is often called Prickly Poppy. The flowers are white or yellow. If the yellow flowers are preferred, use mixing yellow shading with brown green used very thin. The stamens are a deeper yellow (jonquil) touched here and there with yellow brown for effect.

The leaves are a pretty soft light green color, which may be produced by mixing blue green with a very small quantity of moss green V. or grass green, just enough to give a greenish tinge to the blue. Shade with olive green. Some of the leaves may be painted with brown green, shaded with the same.

The pistils are a greenish yellow; mixing yellow and a touch of grass green, shading with olive or brown green will give the color.

Outline with brown No. 4 to 17 and deep purple mixed.

Sometimes it is troublesome to procure a good outline brush, but I have found cutting away the hairs close to the quill of a tracing or lining brush, makes a very good outliner.

If a background is desired the flowers being yellow, brown green, deep blue green and green No. 36 may be used. The colors rubbed down separately with turpentine and only mixed with the brush in laying in the background, giving an effect of varied tints in which the colors appear pure and in every variety of combination. Use three brushes, at first keeping each one with its own color; afterwards the colors may be blended where desired.

If the flowers are white a clouded background of mixing yellow and deep red brown or iron violet laid on very thinly, or carmine No. 1 and sky blue. These will give a light effect, while the green and brown background will give a dash appearance to the rase.

EVERY nation has some artistic qualities of its own born of natural aptitude and aspirations. By these the traditions of art, and more especially of artistic industries, take a definite character if genuinely carried out. Shall we ever be enabled to rival those masses of splendid material in glass which Venice in her zenith of prosperity turned out—jewel-like in color and containing something like crystal light within. In glass staining we are equal to the production of the secondary colors, but not the tertiary colors of the Mediæval age.

DRESDEN CHINA.

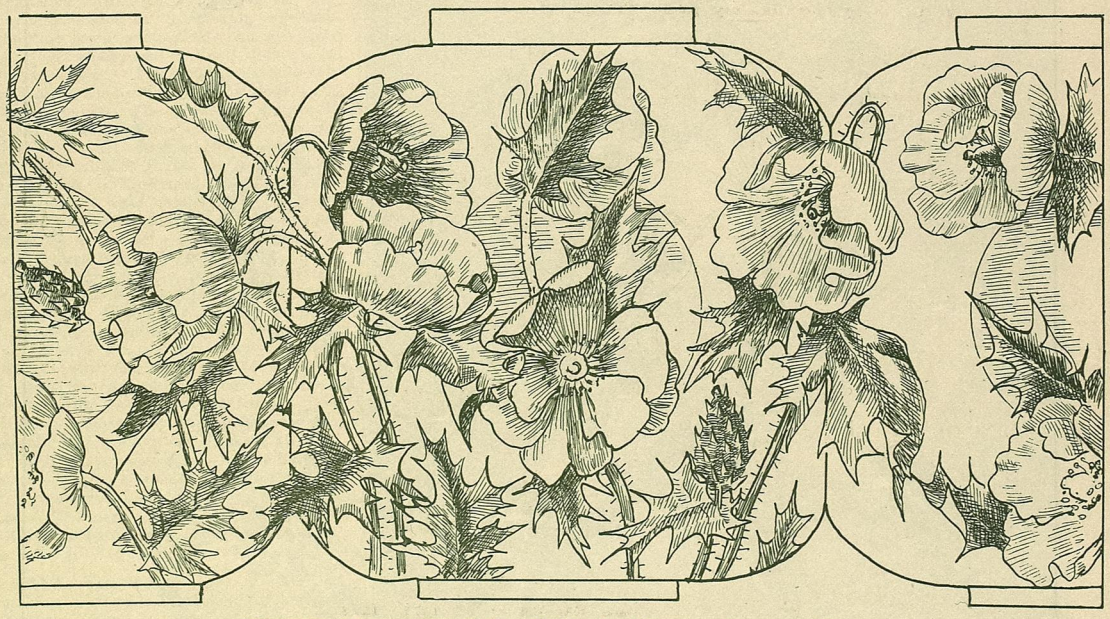
By Maude Haywood.

THE manufactory at Meissen, on the Elbe, near Dresden, can claim the honor of having been the earliest in Europe to produce hard porcelain.

This was at the beginning of the eighteenth century. For two hundred years, ever since the Portugese had first brought over from the East, on their sailing vessels, specimens of the Chinese and Japanese ware, European chemists had striven to imitate their beauty and delicacy, and to discover the secret of the manner of their production. The discovery was finally chanced upon in a totally unexpected fashion, and was the tangible result of an arduous search for that *ignis fatuus* of our forefathers, the philosophers stone.

In the year 1701, John Frederick Bottcher (born 1682, at Schluz, in Saxony), an apothecary's assistant at Berlin, being accused of practicing alchemy, fled for safety to Dresden. The Elector, Augustus II., also King of Poland, a man of experience and luxurious habits, believed him to be possessed of the secret of making gold and, desirous of reaping the benefit of his supposed knowledge, made him in reality a close prisoner, and placed him to prosecute his researches under the supervision of his own chemist Tschirnhaus, who was himself seeking the elixir of life. The real or fancied resemblance, however, to Oriental porcelain, of the substance of Böttcher's crucibles, made by him from the red clay supplied from the neighborhood of Meissen, entirely altered the ideas and aims of the King. He recognized the importance of pursuing such a discovery, and of jealously keeping the secret from betrayal to foreign rivals. Henceforth, Böttcher, more closely guarded than ever, although surrounded by every comfort, studied earnestly to produce the ardently desired porcelain, and as a further precaution, he was confined in the castle of Albrechtsburg, Meissen. During the disturbances at the time of the invasion of Saxony, by Charles XII., in 1706, he was sent for safety, with Tschirnhaus and three workmen, under an escort of cavalry, to the impregnable fortress of Königstein. Whilst there his companions plotted to escape, but Böttcher disclosing the scheme, earned the confidence of the commandant of the king, and henceforth was less rigorously watched. He worked hard and laboriously; for days he would watch by the kiln, and his cheerful disposition encouraged his workmen not to lose heart. In 1708 Tschirnhaus died and Böttcher continued his studies alone. At last he made a grand trial after repeated experiments; for five days and nights the furnace was burning, Böttcher never leaving the place; the king was present at the opening of the kiln; a teapot was taken out and thrown into cold water. The result was entirely successful. He had produced a kind of red stoneware, which they called porcelain, capable of resisting a high temperature. But in reality it was not porcelain—the right materials were lacking. And here once more accident helped them, In the June issue of the Decorator & Furnisher the story was briefly told how Böttcher noticing one day that his white wig (worn in those days) was very heavy, found that an earthy substance had been used as powder, instead of the usual wheat flour. He experimented with it and perceived it to be the long sought for kaolin, china clay, from which he was able to produce hard, white porcelain. Enquiries elicited the facts that one John Schnoer, a wealthy ironmaster, traveling near Aue in the Erzgebirge, was troubled by his horse's feet sticking in the soft earth. Noticing its extreme whiteness, he conceived the idea of using it for hair powder, as a substitute for flour, and caused it to be put up and sold in Dresden, Leipsic and other places (1709 or 1710.) The Elector took possession of the bed of clay. The manufactory was established in the fortress of Albrechtsburg, Meissen, and Böttcher appointed director. The utmost precautions were taken against discovery. The clay was sent secretly to Meissen in sealed casks, and its exportation forbidden under the severest penalty. Every workmen was sworn to silence; notices were hung in the workshops "Secrecy to the grave;" the portcullis of the castle was never raised; no stranger was ever permitted to enter, and even the king himself, when he visited the works, took the customary oath as an example. Notwithstanding all this, the foreman, Stölzel, fled to Vienna in 1718, where they were thus enabled to establish a manufactory, and whence the secret of the process spread to other countries. In 1715 a quantity of porcelain was first exposed for sale at a fair at Leipsic. Böttcher after a while succeeded in producing very fine and beautiful ware, and superintended the works until his death in 1719, at the early age of thirty-seven, in consequence undoubtedly of his intemperate habits. His earliest ware was reddish brown and glazed, sometimes of a gray ash color on the surface, and in comparison to Oriental porcelain, very heavy. The first perfect white porcelain he produced was in close imitation of Eastern ware, with archaic decorations, and so exactly copied as to be almost unrecognizable as European. In quite the beginning he experienced considerable difficulty with the glaze, which was thick, muddy and very imperfect. Enamel colors were first employed in 1718; previously they had used oil colors with mastic varnish. The earliest color used in decorating the China was blue, flowers and figures were burnt in under the glaze, as in the blue and white Nankin.

After the death of Böttcher the manufactory was under the direction of a commission. In 1720 John George Höroldt, of Jena, was appointed superintendent of the painting, and by him the manufacture was greatly improved; the decoration was still Chinese in style; many of the pieces were ornamented by little groups of Chinese figures on a white ground within medallions, the body of the piece being of a grey, green, or yellow



Argemone Design for Vase, by C. A. Morton. (See page 141.)